



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,444	06/08/2006	Gregor Maurer	F-9022	7586
28107 7590 09/28/2007 JORDAN AND HAMBURG LLP 122 EAST 42ND STREET SUITE 4000 NEW YORK, NY 10168				
			EXAMINER ANDERSON, DENISE R	
			ART UNIT 1743	PAPER NUMBER
			MAIL DATE 09/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,444	MAUER, GREGOR	
	Examiner	Art Unit	
	Denise R. Anderson	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08 June 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore:
 - a. The stop limitation of claim 18 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
 - b. Claim 24 recites, "Said spacers comprise interior projections or receiving depressions of said housing that extend with said shearing elements into a sliding catch that axially displaces said spacers." This embodiment must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 13-14, 21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Rolchigo et al. (US Patent No. 5,707,517, Jan. 13, 1998). An element-by-element comparison between the prior art and the claims are shown below. The claims appear in italics with the prior art and examiner's comments in normal font.

Claim 13. A rotational shearing filter (Rolchigo et al., Abstract, lines 1-6)

comprising:

an axially extending housing (Rolchigo et al., Figure 10, reference part 148);

a plurality of spaced-apart, coaxial, annular, hollow filter disks (Rolchigo et al.,

Figure 10, reference part 44; Column 10, 49-56) *disposed in said housing*

(Rolchigo et al., Figure 10, reference part 148);

a rotatable central drive shaft (Rolchigo et al., Figures 1 and 10, reference part 38) *penetrating said filter disks;*

a plurality of axially displaceable shearing elements (Rolchigo et al., Figures

10, reference parts 46) *connected to said drive shaft and rotatable*

therewith (Rolchigo et al., Column 8, lines 26-34 where it is stated that “one or more disc(s) . . . rotate during filtration . . . suspended from . . . the rotatable shaft”);

said shearing elements being positioned adjacent to annular surfaces of said filter disks in the axial direction of said housing (Rolchigo et al., Figure 10); and said shearing elements including spacers (Rolchigo et al., Figure 32, reference parts 47 and 49) that axially displace said shearing elements responsive to thermally induced changes in said housing (spacers would be inherently responsive to thermally induced changes in the housing).

In summary, Rolchigo et al. anticipates claim 13.

Claim 14. The rotational shearing filter of claim 13, wherein said spacers are annular members that enclose said drive shaft.

Rolchigo et al. anticipates claim 13 and further teaches spacers that are annular members that enclose the drive shaft. Rolchigo et al, Figure 32 and Column 38, lines 34-36. Thus, Rolchigo et al. anticipates claim 14.

Claim 21. The rotational shearing filter of claim 13, wherein said drive shaft includes at least one axially extending groove or rib and said shearing elements include a profile adapted for interlocking with said groove or rib in said shaft.

Rolchigo et al. anticipates claim 13 and – in Figure 16 and Column 29, lines 14-19 – further teaches a drive shaft 38 with an axially extending rib (key 164)

that the shearing elements (discs 46) interlock with through the keyway 166.

Thus, Rolchigo et al. anticipates claim 21.

Claim 24. The rotational shearing filter of claim 13, wherein said spacers comprise interior projections or receiving depressions of said housing that extend with said shearing elements into a sliding catch that axially displaces said spacers.

Given that the claim 24 limitations do not appear in the drawings and there is no further explanation in the specification, the examiner will assume these limitations are analogous to the stop limitation referred to in claim 18 that is also not shown in applicant's drawings. A stop structure would be an "interior projection or receiving depression" of the housing that extends, with the shearing elements, into a sliding catch that axially displaces the spacers.

Rolchigo et al. anticipates claim 13. Rolchigo et al. further teaches a plurality of shearing elements positioned against a stop structure disposed on the drive shaft. Rolchigo et al., Figure 10, where the plurality of shearing elements 46 are positioned against a stop structure comprised of ribs 58 and the stop structure is on the drive shaft centered at 40. In summary, Rolchigo et al. anticipates claim 24.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 15, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rolchigo et al. (US Patent No. 5,707,517, Jan. 13, 1998). The claim appears below in italics with the prior art and examiner's comments in normal font.

Claim 15. The rotational shearing filter of claim 14, wherein said annular spacers are arranged between adjacent shearing elements, said spacers comprising a material having a coefficient of heat expansion that matches a coefficient of heat expansion of said housing.

Rolchigo et al. anticipates claim 14 and, in Figures 32 and 33, further teaches that the annular spacers (reference parts 47 and 49) are arranged between the shearing elements (reference part 46). The spacers and housing are likely to be the same material since they both serve a structural support function in the same

equipment and they both contact the incoming feed and must be chemically inert to it. Rolchigo et al., Column 22, line 60 through Column 23, line 3; Column 21, line 64 through Column 22, line 16. If the spacers and the housing are both the same material, then they would also have the same coefficient of heat expansion. It would have been obvious to one having ordinary skill in the art at the time the invention was made, in the Rolchigo et al. rotational shearing filter, to make the spacers and the housing out of the same material since both provide structural support and both must be chemically inert to the incoming feed. In summary, Rolchigo et al. discloses or suggests all claim 15 limitations.

Claim 22. The rotational shearing filter of claim 13, wherein said housing and said drive shaft comprise materials having different coefficients of thermal expansion.

Claim 23. The rotational shearing filter of claim 22, wherein said housing comprises plastic and said drive shaft comprises metal.

Rolchigo et al. anticipates claim 13 and further teaches that the housing "may be of any size or shape and of any material so long as the housing does not adversely affect the performance of the device of this invention" (Column 21, line 65 to column 22, line 1). Rolchigo et al. does not specifically state what the drive shaft material is but does state that the shearing elements (the disks) are "generally . . . made of metal." Rolchigo et al., Column 23, lines 1-3. The

implication is that the drive shaft that rotates the metal shearing elements would also be of metal.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to install in the Rolchigo et al. rotational shearing filter, a metal drive shaft and a nonmetal housing since Rolchigo et al. states at Column 21, line 65 to Column 22, line 1 that the housing "may be of any . . . material so long as the housing does not adversely affect the performance of the device" and "any material" would include plastic that is less expensive and more easily worked relative to metal. Rolchigo et al. also states at Column 23, lines 1-3 that the disks are "generally . . . made of metal" and the implication is that the drive shaft that rotates the disks would also be of metal. In summary, Rolchigo et al. discloses or suggests that a housing could be nonmetal, including plastic, when the drive shaft is metal – as recited in claim 23. If the housing was plastic and the drive shaft was metal, then the housing and drive shaft would have different coefficients of thermal expansion as is recited in claim 22. Thus, Rolchigo discloses or suggests all claim 22 and claim 23 limitations.

8. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rolchigo et al. (US Patent No. 5,707,517, Jan. 13, 1998) as applied to claim 15 above, and further in view of Schwartz (US Patent No. 5,500,122, Mar. 19, 1996). The claim appears below in italics with the prior art and examiner's comments in italics.

Claim 16. The rotational shearing filter of claim 15 further comprising at least one pre-tension spring enclosing said drive shaft, said spring being disposed against at least one shearing element of said plurality of shearing elements and biasing said at least one shearing element towards other shearing elements of said plurality of shearing elements.

Rolchigo et al. discloses or suggests the claimed invention except for the spring enclosing the drive shaft. Schwartz teaches that it is known to provide such a spring for stacked fluid separation membrane disk module assemblies, as shown in Figure 2 where the helical spring 66, 68 encloses the drive shaft 38. It would have been obvious to one having ordinary skill in the art at the time the invention was made to on the Rolchigo et al. filter, enclose the drive shaft with a helical spring as taught by Schwartz, since Schwartz states at Column 1, lines 14-22 that such a modification would prevent fluid leakage by "maintaining compressive force on the membrane disks in the stack to accommodate movements of mechanical components during repeated" filtration / cleaning cycles.

Claim 17. The rotational shearing filter of claim 16, further comprising a pair of opposing pre-tension springs enclosing said drive shaft, said plurality of shearing elements being disposed between said pair of opposing springs.

Rolchigo et al., in view of Schwartz, discloses or suggests all claim 16 limitations. Schwartz further teaches that there might be more than 100 stacked

membrane disks (applicant's filter disks) and that the structural integrity is increased if there is a reinforcement plate every 25th or 26th membrane disk. Schwartz, Column 3, lines 43-47; Column 4, lines 56-60 and Figure 1. Thus, Schwartz teaches a pair of springs enclosing a drive shaft with a plurality of shearing elements between.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed the Rolchigo et al. shearing elements between a pair of opposing springs, as taught by Schwartz, since Schwartz states at Column 4, lines 56-60, that such a modification would "increase the structural integrity" of the rotational shearing filter. In summary, Rolchigo et al., in view of Schwartz, discloses or suggests all claim 17 limitations.

Claim 18. The rotational shearing filter of claim 16, wherein one of said plurality of shearing elements is positioned against a stop structure disposed on said drive shaft.

Rolchigo et al., in view of Schwartz, discloses or suggests all claim 16 limitations. In Figure 10, Rolchigo et al. further teaches a plurality of shearing elements positioned against a stop structure disposed on the drive shaft. Here, a plurality of shearing elements 46 is positioned against a stop structure comprised of ribs 58. The stop structure is disposed on the drive shaft that is centered at 40.

Art Unit: 1743

9. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rolchigo et al. (US Patent No. 5,707,517, Jan. 13, 1998) in view of Schwartz and in further in view of Fendya et al., (US Patent No. 5,679,249, Oct. 21, 1997). The claims appear below in italics with the prior art and examiner's comments in normal font.

Claim 19. The rotational shearing filter of claim 16, wherein:

said annular spacers (Rolchigo et al., Figure 32, reference parts 47 and 49)

comprise sliding bushes (Rolchigo et al, Column 8, lines 34-36) that

enclose said drive shaft (Rolchigo et al., reference part 38 in Figures 1, 10, and 32-34);

said spacers (Rolchigo et al., reference parts 47 and 49 in Figures 10 and 33-34) being either opposing end spacers or spacers disposed between said end spacers;

said shearing elements (Rolchigo et al., reference part 46 in Figures 10, 32, 33, and 34) being either opposing end shearing elements or shearing elements disposed between said end shearing elements;

each spacer (Rolchigo et al., reference parts 47 and 49 in Figures 32-34) being disposed between one of said plurality of filter disks and an adjacent one of said plurality of shearing elements; and said end spacers being disposed between said end shearing elements and said housing.

Rolchigo et al., in view of Schwartz, discloses or suggests all claim 16 limitations. Rolchigo et al. explicitly discloses the filter disks being the end plates

instead of the shearing elements which applicant is reciting. Fendya et al. discloses the shearing elements being the endplates.

Fendya et al. discloses "a dynamic filter assembly including one or more filter elements and one or more members disposed within the housing" where the "filter elements and the members are interleaved and arranged to rotate with respect to one another." Fendya et al., Abstract. Fendya et al. further teaches the shearing elements 151 as the endplates and the shearing elements 151 interleaved with the filter disks 148. It would have been obvious to one of ordinary skill in the art at the time the invention was made to explicitly include the Fendya et al. endplates on the Rolchigo et al. rotational shearing filter because Fendya et al. states at Column 1, lines 34-40 that such a modification would "sweep the surface of the filter elements" and prevent debris from accumulating on the filter element (applicant's filter disk). Fouling of the filter disk is minimized and this extends the useful life of the filter disk.

Claim 20. The rotational shearing filter of claim 19, wherein said end spacers are connected to said housing and the remaining of said spacers are connected to said filter disks.

Rolchigo et al., in view of Schwartz, and in further view of Fendya et al., discloses or suggests all claim 19 limitations. In Figures 32-34, Rolchigo et al. teaches a second set of end spacers 68 connected to a housing made up of reference parts 44 – and the remaining second set of spacers 68 are connected

Art Unit: 1743

to the filter disks. In summary, Rolchigo et al., in view of Schwartz and Fendya et al., discloses or suggests all claim 20 limitations.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6669844 B2	12/30/2003	Strohm; Gerhard et al.	210/224
US 6416666 B1	07/09/2002	Salyer; David N. et al.	210/321.75
US 2434807 A	01/20/1948	Little John W	210/331

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise R. Anderson whose telephone number is 571-270-3166. The examiner can normally be reached on Monday through Thursday, from 8:00 am to 6:00 pm.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1743

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DRA


WALTER D. GRIFFIN
SUPERVISORY PATENT EXAMINER